Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
Subpart A - General Provisions						Ap-A					
§ 835.1 Scope.						Ap-A					
(a) General. The rules in this part establish radiation protection standards, limits, and program requirements for protecting individuals from ionizing radiation resulting from the conduct of DOE activities.		1.0.				Ap-A					
(b) Exclusion. Except as discussed in paragraph (c) of this section, the requirements in this part do not apply to:		1.0.				Ap-A					
1 Activities that are regulated through a license by the Nuclear Regulatory Commission or a State under an Agreement with the Nuclear Regulatory Commission, including activities certified by the Nuclear Regulatory Commission under section 1701 of the Atomic Energy Act;	"Activities" include use or possession of items acquired under a general or specific NRC license (e.g., tritated exit signs, portable x-ray fluorescence lead-based paint analyzers). Such items are to be handled in accordance with the provisions of the NRC License.	1.0.				Ap-A					
2 Activities conducted under the authority of the Director, Naval Nuclear Propulsion Program, as described in Public Law 98-525;		1.0.				Ap-A					

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10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
3 Activities conducted under the Nuclear Explosives and Weapons Surety Program relating to the prevention of accidental or unauthorized nuclear detonations.						Ap-A					
4 Radioactive material transportation as defined in this part;		1.0.				Ap-A					
5 DOE activities conducted outside the United States on territory under the jurisdiction of a foreign government to the extent governed by occupational radiation protection requirements agreed to between the United States and the cognizant government; or						Ap-A					
6 Background radiation, radiation doses received as a patient for the purposes of medical diagnosis or therapy, or radiation doses received from participation as a subject in medical research programs.		1.0.				Ap-A					
(c) Occupational doses received as a result of excluded activities and radioactive material transportation, as listed in paragraphs (b)(1) through (b)(5) of this section, shall be considered when determining compliance with the occupational dose limits at §§ 835.202 and 835.207, and with the limits for the embryo/fetus at § 835.206. Occupational doses resulting from authorized emergency exposures and planned special exposures shall not be considered when determining compliance with the dose limits at §§ 835.202 and 835.207.						Ap-A					
§ 835.2 Definitions.						Ap-A					

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LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(a) As used in this part:						Ap-A					
Accountable sealed radioactive source means a sealed radioactive source having a half-life equal to or greater than 30 days and an isotopic activity equal to or greater than the corresponding value provided in appendix E of this part.			Ap-A			Ap-A					
Airborne radioactive material or airborne radioactivity means radioactive material dispersed in the air in the form of dusts, fumes, particulates, mists, vapors, or gases.			Ap-A			Ap-A					
Airborne radioactivity area means any area, accessible to individuals, where:			Ap-A			Ap-A					
1 The concentration of airborne radioactivity, above natural background, exceeds or is likely to exceed the derived air concentration (DAC) values listed in appendix A or appendix C of this part; or			Ap-A			Ap-A					
2 An individual present in the area without respiratory protection could receive an intake exceeding 12 DAC-hours in a week.			Ap-A			Ap-A					

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LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
ALARA means "As Low As is Reasonably Achievable," which is the approach to radiation protection to manage and control exposures (both individual and collective) to the work force and to the general public to as low as is reasonable, taking into account social, technical, economic, practical, and public policy considerations. As used in this part, ALARA is not a dose limit but a process which has the objective of attaining doses as far below the applicable limits of this part as is reasonably achievable.		Ap-A	Ap-A			Ap-A					
Annual limit on intake (ALI) means the derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a year by the reference man (ICRP Publication 23) that would result in a committed effective dose equivalent of 5 rems (0.05 sievert) or a committed dose equivalent of 50 rems (0.5 sievert) to any individual organ or tissue. ALI values for intake by ingestion and inhalation of selected radionuclides are based on Table 1 of the U.S. Environmental Protection Agency's Federal Guidance Report No. 11, Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion, published September 1988. This document is available from the National Technical Information Service, Springfield, VA.			Ap-A			Ap-A					
Background means radiation from:		Ap-A				Ap-A					
(i) Naturally occurring radioactive materials which have not been technologically enhanced;		Ap-A				Ap-A					

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10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(ii) Cosmic sources;		Ap-A				Ap-A					
(iii) Global fallout as it exists in the environment (such as from the testing of nuclear explosive devices);		Ap-A				Ap-A					
(iv) Radon and its progeny in concentrations or levels existing in buildings or the environment which have not been elevated as a result of current or prior activities; and		Ap-A				Ap-A					
(v) Consumer products containing nominal amounts of radioactive material or producing nominal amounts of radiation.		Ap-A	3.4.5			Ap-A					
Bioassay means the determination of kinds, quantities, or concentrations, and, in some cases, locations of radioactive material in the human body, whether by direct measurement or by analysis and evaluation of radioactive materials excreted or removed from the human body.			Ap-A			Ap-A					
Calibration means to adjust and/or determine either:		Ap-A				Ap-A					
(i) The response or reading of an instrument relative to a standard (e.g., primary, secondary, or tertiary) or to a series of conventionally true values; or		Ap-A				Ap-A					
(ii) The strength of a radiation source relative to a standard (e.g., primary, secondary, or tertiary) or conventionally true value.		Ap-A				Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
Contamination area means any area, accessible to individuals, where removable surface contamination levels exceed or are likely to exceed the removable surface contamination values specified in appendix D of this part, but do not exceed 100 times those values.		Ap-A	Ap-A			Ap-A					
Contractor means any entity under contract with the Department of Energy with the responsibility to perform activities at a DOE site or facility.						Ap-A					
Controlled area means any area to which access is managed by or for DOE to protect individuals from exposure to radiation and/or radioactive material.		5.2 Ap-A	3.4.1 Ap-A	3.4.1 Ap-A		Ap-A					
Declared pregnant worker means a woman who has voluntarily declared to her employer, in writing, her pregnancy for the purpose of being subject to the occupational dose limits to the embryo/fetus as provided in § 835.206. This declaration may be revoked, in writing, at any time by the declared pregnant worker.		4.3 Ap-A				Ap-A					

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10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
Derived air concentration (DAC) means, for the radionuclides listed in appendix A of this part, the airborne concentration that equals the ALI divided by the volume of air breathed by an average worker for a working year of 2000 hours (assuming a breathing volume of 2400 m3). For the radionuclides listed in appendix C of this part, the air immersion DACs were calculated for a continuous, non-shielded exposure via immersion in a semi-infinite atmospheric cloud. The value is based upon the derived airborne concentration found in Table 1 of the U.S. Environmental Protection Agency's Federal Guidance Report No. 11, Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion, published September 1988. This document is available from the National Technical Information Service, Springfield, VA.			Ap-A			Ap-A					
Derived air concentration-hour (DAC-hour) means the product of the concentration of radioactive material in air (expressed as a fraction or multiple of the DAC for each radionuclide) and the time of exposure to that radionuclide, in hours.			Ap-A			Ap-A					

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LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
DOE activity means an activity taken for or by DOE in a DOE operation or facility that has the potential to result in the occupational exposure of an individual to radiation or radioactive material. The activity may be, but is not limited to, design, construction, operation, or decommissioning. To the extent appropriate, the activity may involve a single DOE facility or operation or a combination of facilities and operations, possibly including an entire site or multiple DOE sites.						Ap-A					
Entrance or access point means any location through which an individual could gain access to areas controlled for the purpose of radiation protection. This includes entry or exit portals of sufficient size to permit human entry, irrespective of their intended use.			Ap-A	Ap-A		Ap-A					
General employee means an individual who is either a DOE or DOE contractor employee; an employee of a subcontractor to a DOE contractor; or an individual who performs work for or in conjunction with DOE or utilizes DOE facilities.		Ap-A				Ap-A					
High contamination area means any area, accessible to individuals, where removable surface contamination levels exceed or are likely to exceed 100 times the removable surface contamination values specified in appendix D of this part.		Ap-A	Ap-A			Ap-A					

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LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
High radiation area means any area, accessible to individuals, in which radiation levels could result in an individual receiving a deep dose equivalent in excess of 0.1 rem (0.001 sievert) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.		Ap-A	Ap-A	Ap-A		Ap-A					
Individual means any human being.						Ap-A					
Member of the public means an individual who is not a general employee. An individual is not a "member of the public" during any period in which the individual receives an occupational dose.		Ap-A				Ap-A					
Minor means an individual less than 18 years of age.		Ap-A				Ap-A					
Monitoring means the measurement of radiation levels, airborne radioactivity concentrations, radioactive contamination levels, quantities of radioactive material, or individual doses and the use of the results of these measurements to evaluate radiological hazards or potential and actual doses resulting from exposures to ionizing radiation.		Ap-A				Ap-A					
Nonstochastic effects means effects due to radiation exposure for which the severity varies with the dose and for which a threshold normally exists (e.g., radiation-induced opacities within the lens of the eye).						Ap-A					

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LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
Occupational dose means an individual's ionizing radiation dose (external and internal) as a result of that individual's work assignment. Occupational dose does not include doses received as a medical patient or doses resulting from background radiation or participation as a subject in medical research programs.		Ap-A				Ap-A					
Person means any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency, any State or political subdivision of, or any political entity within a State, any foreign government or nation or other entity, and any legal successor, representative, agent or agency of the foregoing; provided that person does not include the Department or the United States Nuclear Regulatory Commission.						Ap-A					
Radiation means ionizing radiation: alpha particles, beta particles, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Radiation, as used in this part, does not include non-ionizing radiation, such as radio- or micro-waves, or visible, infrared, or ultraviolet light.		Ap-A				Ap-A					
Radiation area means any area, accessible to individuals, in which radiation levels could result in an individual receiving a deep dose equivalent in excess of 0.005 rem (0.05 millisievert) in 1 hour at 30 centimeters from the source or from any surface that the radiation penetrates.		Ap-A	Ap-A	Ap-A		Ap-A					

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10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
Radioactive material area means any area within a controlled area, accessible to individuals, in which items or containers of radioactive material exist and the total activity of radioactive material exceeds the applicable values provided in appendix E of this part.			Ap-A			Ap-A					
Radioactive material transportation means the movement of radioactive material by aircraft, rail, vessel, or highway vehicle when such movement is subject to Department of Transportation regulations or DOE Orders that govern such movements. Radioactive material transportation does not include preparation of material or packagings for transportation, monitoring required by this part, storage of material awaiting transportation, or application of markings and labels required for transportation.		Ap-A	Ap-A			Ap-A					
Radiological area means any area within a controlled area defined in this section as a "radiation area," "high radiation area," "very high radiation area," "contamination area," "high contamination area," or "airborne radioactivity area."		Ap-A	Ap-A			Ap-A					

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10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
Radiological worker means a general employee whose job assignment involves operation of radiation producing devices or working with radioactive materials, or who is likely to be routinely occupationally exposed above 0.1 rem (0.001 sievert) per year total effective dose equivalent.	Radiation-producing device means a device which, under normal operations, produces ionizing radiation either incidentally or intentionally (including accelerators), and could reasonably result in a dose >0.1 rem to the whole body or >5 rem to the hands under normal or accidental conditions.	Ap-A				Ap-A					
Real-time air monitoring means measurement of the concentrations or quantities of airborne radioactive materials on a continuous basis.			Ap-A			Ap-A					
Respiratory protective device means an apparatus, such as a respirator, worn by an individual for the purpose of reducing the individual's intake of airborne radioactive materials.			Ap-A			Ap-A					

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10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
Sealed radioactive source means a radioactive source manufactured, obtained, or retained for the purpose of utilizing the emitted radiation. The sealed radioactive source consists of a known or estimated quantity of radioactive material contained within a sealed capsule, sealed between layer(s) of non-radioactive material, or firmly fixed to a non-radioactive surface by electroplating or other means intended to prevent leakage or escape of the radioactive material. Sealed radioactive sources do not include reactor fuel elements, nuclear explosive devices, and radioisotope thermoelectric generators.			Ap-A			Ap-A					
Source leak test means a test to determine if a sealed radioactive source is leaking radioactive material.			Ap-A			Ap-A					
Stochastic effects means malignant and hereditary diseases for which the probability of an effect occurring, rather than its severity, is regarded as a function of dose without a threshold, for radiation protection purposes.						Ap-A					
Very high radiation area means any area accessible to individuals in which radiation levels could result in an individual receiving an absorbed dose in excess of 500 rads (5 grays) in one hour at 1 meter from a radiation source or from any surface that the radiation penetrates.		Ap-A	Ap-A	Ap-A		Ap-A					
Week means a period of seven consecutive days.						Ap-A					

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10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
Year means the period of time beginning on or near January 1 and ending on or near December 31 of that same year used to determine compliance with the provisions of this part. The starting and ending date of the year used to determine compliance may be changed provided that the change is made at the beginning of the year and that no day is omitted or duplicated in consecutive years.						Ap-A					
(b) As used in this part to describe various aspects of radiation dose:						Ap-A					
Absorbed dose (D) means the energy absorbed by matter from ionizing radiation per unit mass of irradiated material at the place of interest in that material. The absorbed dose is expressed in units of rad (or gray) (1 rad = 0.01 gray).						Ap-A					
Committed dose equivalent ($H_{T,50}$) means the dose equivalent calculated to be received by a tissue or organ over a 50-year period after the intake of a radionuclide into the body. It does not include contributions from radiation sources external to the body. Committed dose equivalent is expressed in units of rem (or sievert) (1 rem = 0.01 sievert).		Ap-A				Ap-A					
Committed effective dose equivalent ($H_{E,50}$) means the sum of the committed dose equivalents to various tissues in the body ($H_{T,50}$), each multiplied by the appropriate weighting factor (w_T)–that is, $H_{E,50} = \sum w_T H_{T,50}$. Committed effective dose equivalent is expressed in units of rem (or sievert).		Ap-A	Ap-A			Ap-A					

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10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
Cumulative total effective dose equivalent means the sum of all total effective dose equivalent values recorded for an individual, where available, for each year occupational dose was received, beginning January 1, 1989.						Ap-A					
Deep dose equivalent means the dose equivalent derived from external radiation at a depth of 1 cm in tissue.		Ap-A	Ap-A			Ap-A					
Dose is a general term for absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, or total effective dose equivalent as defined in this part.		Ap-A	Ap-A			Ap-A					
Dose equivalent (H) means the product of absorbed dose (D) in rad (or gray) in tissue, a quality factor (Q), and other modifying factors (N). Dose equivalent is expressed in units of rem (or sievert) (1 rem = 0.01 sievert).		Ap-A	Ap-A			Ap-A					
Effective dose equivalent (H_E) means the summation of the products of the dose equivalent received by specified tissues of the body (H_T) and the appropriate weighting factor (w_T)--that is, $H_E = \%w_T H_T$. It includes the dose from radiation sources internal and/or external to the body. For purposes of compliance with this part, deep dose equivalent to the whole body may be used as effective dose equivalent for external exposures. The effective dose equivalent is expressed in units of rem (or sievert).		Ap-A	Ap-A			Ap-A					
External dose or exposure means that portion of the dose equivalent received from radiation sources outside the body (i.e., "external sources").		Ap-A	Ap-A			Ap-A					

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Extremity means hands and arms below the elbow or feet and legs below the knee.		Ap-A	Ap-A			Ap-A					
Internal dose or exposure means that portion of the dose equivalent received from radioactive material taken into the body (i.e., "internal sources").		Ap-A	Ap-A			Ap-A					
Lens of the eye dose equivalent means the external exposure of the lens of the eye and is taken as the dose equivalent at a tissue depth of 0.3 cm.						Ap-A					
Quality factor (Q) means the modifying factor used to calculate the dose equivalent from the absorbed dose; the absorbed dose (expressed in rad or gray) is multiplied by the appropriate quality factor.						Ap-A					
(i) The quality factors to be used for determining dose equivalent in rem are as follow:						Ap-A					
Radiation type / **Quality Factor** **X-rays, gamma rays, positrons, electrons (including tritium beta particles)** — **1** **Neutrons, ≤10 keV** — **3** **Neutrons, >10 keV**						Ap-A Ap-A Ap-A					

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10 CFR 835		LLNL Implementation Methodology	Doc 20.1	Doc 20.2	Doc 20.3	Doc 20.4	Doc 20.5	Doc 22.6	NA	per ES&HM	DAP	Facility Documentation
Protons and singly charged particles of unknown energy with rest mass greater than one atomic mass unit	**10**						Ap-A					
Alpha particles and multiple-charged particles (and particles of unknown charge) of unknown energy.	**20**						Ap-A					
When spectral data are insufficient to identify the energy of the neutrons, a quality factor of 10 shall be used.							Ap-A					
(ii) When spectral data are sufficient to identify the energy of the neutrons, the following mean quality factor values may be used:							Ap-A					
QUALITY FACTORS FOR NEUTRONS							Ap-A					
[Mean quality factors, (maximum value in a 30-cm dosimetry phantom), and values of neutron flux density that deliver in 40 hours, a maximum dose equivalent of 0.1 rem (0.001 sievert). Where neutron energy falls between listed values, the more restrictive mean quality factor shall be used.]							Ap-A					
Neutron energy (MeV)	**Mean quality factor**	**Flux density (cm^{-2} s^{-1})**					Ap-A					
2.5×10^{-8} thermal	**2**	**680**					Ap-A					
1×10^{-7}	**2**	**680**					Ap-A					

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1×10^{-6}	2	560						Ap-A					
1×10^{-5}	2	560						Ap-A					
1×10^{-4}	2	580						Ap-A					
1×10^{-3}	2	680						Ap-A					
1×10^{-2}	2.5	700						Ap-A					
1×10^{-1}	7.5	115						Ap-A					
5×10^{-1}	11	27						Ap-A					
1	11	19						Ap-A					
2.5	9	20						Ap-A					
5	8	16						Ap-A					
7	7	17						Ap-A					
10	6.5	17						Ap-A					
Neutron energy (MeV)	Mean quality factor	Flux density (cm^{-2} s^{-1})											
14	7.5	12						Ap-A					
20	8	11						Ap-A					
40	7	10						Ap-A					
60	5.5	11						Ap-A					
1×10^{2}	4	14						Ap-A					
2×10^{2}	3.5	13						Ap-A					
3×10^{2}	3.5	11						Ap-A					
4×10^{2}	3.5	10						Ap-A					
Shallow dose equivalent means the dose equivalent deriving from external radiation at a depth of 0.007 cm in tissue.				Ap-A				Ap-A					

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Total effective dose equivalent (TEDE) means the sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).		Ap-A				Ap-A					
Weighting factor (w_T) means the fraction of the overall health risk, resulting from uniform, whole body irradiation, attributable to specific tissue (T). The dose equivalent to tissue, (H_T), is multiplied by the appropriate weighting factor to obtain the effective dose equivalent contribution from that tissue. The weighting factors are as follows:		Ap-A				Ap-A					
WEIGHTING FACTORS FOR VARIOUS ORGANS AND TISSUES						Ap-A					
Organs or tissues (T) / **Weighting factor (w_T)**						Ap-A					
Gonads 0.25						Ap-A					
Breasts 0.15						Ap-A					
Red bone marrow 0.12						Ap-A					
Lungs 0.12						Ap-A					
Thyroid 0.03						Ap-A					
Bone surfaces 0.03						Ap-A					
Remainder {1} 0.30						Ap-A					
Whole body {2} 1.00						Ap-A					
1 "Remainder" means the five other organs or tissues, excluding the skin and lens of the eye, with the highest dose (e.g., liver, kidney, spleen, thymus, adrenal, pancreas, stomach, small intestine, and upper large intestine). The weighting factor for each remaining organ or tissue is 0.06.											

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LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	LLNL Implementation Methodology	Doc 20.1	Doc 20.2	Doc 20.3	Doc 20.4	Doc 20.5	Doc 22.6	NA	per ES&HM	DAP	Facility Documentation
2 For the case of uniform external irradiation of the whole body, a weighting factor (w_T) equal to 1 may be used in determination of the effective dose equivalent.						Ap-A					
Whole body means, for the purposes of external exposure, head, trunk (including male gonads), arms above and including the elbow, or legs above and including the knee.		Ap-A	Ap-A	Ap-A		Ap-A					
(c) Terms defined in the Atomic Energy Act and not defined in this part are used consistent with the meanings given in the Act.						Ap-A					
§ 835.3 General rule.						Ap-A					
(a) No person or DOE personnel shall take or cause to be taken any action inconsistent with the requirements of:		1.0.				Ap-A					
1 This part; or		1.0.				Ap-A					
2 Any program, plan, schedule, or other process established by this part.		1.0.				Ap-A					
(b) With respect to a particular DOE activity, contractor management shall be responsible for compliance with the requirements of this part.		1.0.				Ap-A					
(c) Where there is no contractor for a DOE activity, DOE shall ensure implementation of and compliance with the requirements of this part.						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(d) Nothing in this part shall be construed as limiting actions that may be necessary to protect health and safety. (e) For those activities that are required by §§ 835.102, 835.901(e), 835.1202(a), and 835.1202(b), the time interval to conduct these activities may be extended by a period not to exceed 30 days to accommodate scheduling needs.		1.0. 3.5				Ap-A Ap-A					
§ 835.4 Radiological units.						Ap-A					
Unless otherwise specified, the quantities used in the records required by this part shall be clearly indicated in special units of curie, rad, roentgen, or rem, including multiples and subdivisions of these units. The SI units, becquerel (Bq), gray (Gy), and sievert (Sv), are only provided parenthetically in this part for reference with scientific standards.	Records may be in the units specified in the applicable requirement (e.g., "dpm" may be used for contamination control records). The SI units may be used in documentation if required by other federal rules (e.g., DOT) or included parenthetically to provide reference with scientific standards.					Ap-A					
Subpart B-Management and Administrative Requirements **§ 835.101 Radiation protection programs.**						Ap-A Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(a) A DOE activity shall be conducted in compliance with a documented radiation protection program (RPP) as approved by the DOE.		1.0.				Ap-A					
(b) The DOE may direct or make modifications to a RPP.						Ap-A					
(c) The content of each RPP shall be commensurate with the nature of the activities performed and shall include formal plans and measures for applying the as low as reasonably achievable (ALARA) process to occupational exposure.		3.2			1.0.	Ap-A					
(d) The RPP shall specify the existing and/or anticipated operational tasks that are intended to be within the scope of the RPP. Except as provided in § 835.101(h), any task outside the scope of a RPP shall not be initiated until an update of the RPP is approved by DOE.						Ap-A					
(e) The content of the RPP shall address, but shall not necessarily be limited to, each requirement in this part.						Ap-A					
(f) The RPP shall include plans, schedules, and other measures for achieving compliance with regulations of this part. Unless otherwise specified in this part, compliance with amendments to this part shall be achieved no later than 180 days following approval of the revised RPP by DOE. Compliance with the requirements of § 835.402(d) for radiobioassay program accreditation shall be achieved no later than January 1, 2002.						Ap-A					
(g) An update of the RPP shall be submitted to DOE:						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
1 Whenever a change or an addition to the RPP is made;						Ap-A					
2 Prior to the initiation of a task not within the scope of the RPP; or						Ap-A					
3 Within 180 days of the effective date of any modifications to this part.						Ap-A					
(h) Changes, additions, or updates to the RPP may become effective without prior Department approval only if the changes do not decrease the effectiveness of the RPP and the RPP, as changed, continues to meet the requirements of this part. Proposed changes that decrease the effectiveness of the RPP shall not be implemented without submittal to and approval by the Department.						Ap-A					
(i) An initial RPP or an update shall be considered approved 180 days after its submission unless rejected by DOE at an earlier date.						Ap-A					
§ 835.102 Internal audits.						Ap-A					
Internal audits of the radiation protection program, including examination of program content and implementation, shall be conducted through a process that ensures that all functional elements are reviewed no less frequently than every 36 months.		3.1			2.9	Ap-A					
§ 835.103 Education, Training and Skills.						Ap-A					

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LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
Individuals responsible for developing and implementing measures necessary for ensuring compliance with the requirements of this part shall have the appropriate education, training, and skills to discharge these responsibilities.						Ap-A					
§ 835.104 Written Procedures.						Ap-A					
Written procedures shall be developed and implemented as necessary to ensure compliance with this part, commensurate with the radiological hazards created by the activity and consistent with the education, training, and skills of the individuals exposed to those hazards.		3.4				Ap-A				56	
Subpart C--Standards for Internal and External Exposure						Ap-A					
§ 835.201 [Reserved]						Ap-A					
§ 835.202 Occupational dose limits for general employees.		4.1				Ap-A					
(a) Except for planned special exposures conducted consistent with § 835.204 and emergency exposures authorized in accordance with § 835.1302, the occupational dose received by general employees shall be controlled such that the following limits are not exceeded in a year:						Ap-A					
1 A total effective dose equivalent of 5 rems (0.05 sievert);		T-2				Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
2 The sum of the deep dose equivalent for external exposures and the committed dose equivalent to any organ or tissue other than the lens of the eye of 50 rems (0.5 sievert);		T-2				Ap-A					
3 A lens of the eye dose equivalent of 15 rems (0.15 sievert); and		T-2				Ap-A					
4 A shallow dose equivalent of 50 rems (0.5 sievert) to the skin or to any extremity.	Shallow dose equivalent occurring below the elbow or below the knees shall be assigned to the extremity, and not to the skin. Shallow dose equivalent occurring on other portions of the body shall be recorded as shallow dose equivalent to the skin.	T-2				Ap-A					
(b) All occupational doses received during the current year, except doses resulting from planned special exposures conducted in compliance with § 835.204 and emergency exposures authorized in accordance with § 835.1302, shall be included when demonstrating compliance with §§ 835.202(a) and 835.207.						Ap-A					
(c) Doses from background, therapeutic and diagnostic medical radiation, and participation as a subject in medical research programs shall not be included in dose records or in the assessment of compliance with the occupational dose limits.		4.1				Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
§ 835.203 Combining internal and external dose equivalents.						Ap-A					
(a) The total effective dose equivalent during a year shall be determined by summing the effective dose equivalent from external exposures and the committed effective dose equivalent from intakes during the year.		T-2				Ap-A					
(b) Determinations of the effective dose equivalent shall be made using the weighting factor values provided in § 835.2.						Ap-A					
§ 835.204 Planned special exposures.		4.4				Ap-A					
(a) A planned special exposure may be authorized for a radiological worker to receive doses in addition to and accounted for separately from the doses received under the limits specified in § 835.202(a), provided that each of the following conditions is satisfied.						Ap-A					
1 The planned special exposure is considered only in an exceptional situation when alternatives that might prevent a radiological worker from exceeding the limits in § 835.202(a) are unavailable or impractical;						Ap-A					
2 The contractor management (and employer, if the employer is not the contractor) specifically requests the planned special exposure, in writing; and						Ap-A					
3 Joint written approval is received from the appropriate DOE Headquarters program office and the Secretarial Officer responsible for environment, safety and health matters.						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(b) Prior to requesting an individual to participate in an authorized planned special exposure, the individual's dose from all previous planned special exposures and all doses in excess of the occupational dose limits shall be determined.						Ap-A					
(c) An individual shall not receive a planned special exposure that, in addition to the doses determined in § 835.204(b), would result in a dose exceeding the following:						Ap-A					
1 In a year, the numerical values of the dose limits established at § 835.202(a); and						Ap-A					
2 Over the individual's lifetime, five times the numerical values of the dose limits established at § 835.202(a).						Ap-A					
(d) Prior to a planned special exposure, written consent shall be obtained from each individual involved. Each such written consent shall include:						Ap-A					
1 The purpose of the planned operations and procedures to be used;						Ap-A					
2 The estimated doses and associated potential risks and specific radiological conditions and other hazards which might be involved in performing the task; and						Ap-A					
3 Instructions on the measures to be taken to keep the dose ALARA considering other risks that may be present.						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(e) Records of the conduct of a planned special exposure shall be maintained and a written report submitted within 30 days after the planned special exposure to the approving organizations identified in § 835.204(a)(3).						Ap-A					
(f) The dose from planned special exposures is not to be considered in controlling future occupational dose of the individual under § 835.202(a), but is to be included in records and reports required under this part.						Ap-A					
§ 835.205 Determination of compliance for non-uniform exposure of the skin.						Ap-A					
(a) Non-uniform exposures of the skin from X-rays, beta radiation, and/or radioactive material on the skin are to be assessed as specified in this section.						Ap-A					
(b) For purposes of demonstrating compliance with § 835.202(a)(4), assessments shall be conducted as follows:						Ap-A					
1 Area of skin irradiated is 100 cm^2 or more. The non-uniform dose equivalent received during the year shall be averaged over the 100 cm^2 of the skin receiving the maximum dose, added to any uniform dose equivalent also received by the skin, and recorded as the shallow dose equivalent to any extremity or skin for the year.						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
2 Area of skin irradiated is 10 cm^2 or more, but is less than 100 cm^2. The non-uniform dose equivalent (H) to the irradiated area received during the year shall be added to any uniform dose equivalent also received by the skin and recorded as the shallow dose equivalent to any extremity or skin for the year. H is the dose equivalent averaged over the 1 cm^2 of skin receiving the maximum absorbed dose, D, reduced by the fraction f, which is the irradiated area in cm^2 divided by 100 cm^2 (i.e., H = fD). In no case shall a value of f less than 0.1 be used.						Ap-A					
3 Area of skin irradiated is less than 10 cm^2. The non-uniform dose equivalent shall be averaged over the 1 cm^2 of skin receiving the maximum dose. This dose equivalent shall:						Ap-A					
(i) Be recorded in the individual's occupational exposure history as a special entry; and						Ap-A					
(ii) Not be added to any other shallow dose equivalent to any extremity or skin recorded as the dose equivalent for the year.						Ap-A					
§ 835.206 Limits for the embryo/fetus.						Ap-A					
(a) The dose equivalent limit for the embryo/fetus from the period of conception to birth, as a result of occupational exposure of a declared pregnant worker, is 0.5 rem (0.005 sievert).		4.3				Ap-A					
(b) Substantial variation above a uniform exposure rate that would satisfy the limits provided in § 835.206(a) shall be avoided.		Ap-C				Ap-A					

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10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(c) If the dose equivalent to the embryo/fetus is determined to have already exceeded 0.5 rem (0.005 sievert) by the time a worker declares her pregnancy, the declared pregnant worker shall not be assigned to tasks where additional occupational exposure is likely during the remaining gestation period.		Ap-C				Ap-A					
§ 835.207 Occupational dose limits for minors.						Ap-A					
The dose equivalent limits for minors occupationally exposed to radiation and/or radioactive materials at a DOE activity are 0.1 rem (0.001 sievert) total effective dose equivalent in a year and 10% of the occupational dose limits specified at § 835.202(a)(3) and (a)(4).		T-2				Ap-A					
§ 835.208 Limits for members of the public entering a controlled area.						Ap-A					
The total effective dose equivalent limit for members of the public exposed to radiation and/or radioactive material during access to a controlled area is 0.1 rem (0.001 sievert) in a year.		T-2				Ap-A					
§ 835.209 Concentrations of radioactive material in air.						Ap-A					
(a) The derived air concentration (DAC) values given in appendices A and C of this part shall be used in the control of occupational exposures to airborne radioactive material. (b) The estimation of internal dose shall be based on bioassay data rather than air concentration values unless bioassay data are:			3.12.2 5.6.5			Ap-A Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
1 unavailable; 2 inadequate; or 3 internal dose estimates based on air concentration values are demonstrated to be as or more accurate.			5.6.5 5.6.5 5.6.5			Ap-A Ap-A Ap-A					
Subpart D--[Reserved]						Ap-A					
Subpart E--Monitoring of Individuals and Areas						Ap-A					
§ 835.401 General requirements.						Ap-A					
(a) Monitoring of individuals and areas shall be performed to:		7.0.	3.12	3.8 3.9		Ap-A				1 2 3 4 5 6 8 9 10 11 12 14 18 24 27 41 43 50 51 52	

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
1 Demonstrate compliance with the regulations in this part;		7.0.	3.12	3.8 3.9		Ap-A					
2 Document radiological conditions;		7.0.	3.12	3.8 3.9		Ap-A					
3 Detect changes in radiological conditions;		7.0.	3.12	3.8 3.9		Ap-A					
4 Detect the gradual buildup of radioactive material;		7.0.	3.12			Ap-A					
5 Verify the effectiveness of engineering and process controls in containing radioactive material and reducing radiation exposure; and		7.0.	3.12	3.8 3.9		Ap-A					
6 Identify and control potential sources of individual exposure to radiation and/or radioactive material.		7.0.	3.12	3.8 3.9		Ap-A					
(b) Instruments and equipment used for monitoring shall be:		7.1				Ap-A					
1 Periodically maintained and calibrated on an established frequency;		7.1				Ap-A				19 20 34 35 36	
2 Appropriate for the type(s), levels, and energies of the radiation(s) encountered;		7.1			2.5 Ap-E	Ap-A				DAP Part-I	
3 Appropriate for existing environmental conditions; and		7.1				Ap-A				DAP Part-I	

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10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
4 Routinely tested for operability.		7.1				Ap-A				14 33 37 38 39	
§ 835.402 Individual monitoring.						Ap-A					
(a) For the purpose of monitoring individual exposures to external radiation, personnel dosimeters shall be provided to and used by:		Ap-D, T -1				Ap-A					
1 Radiological workers who, under typical conditions, are likely to receive one or more of the following:		Ap-D, T -1				Ap-A					
(i) An effective dose equivalent to the whole body of 0.1 rem (0.001 sievert) or more in a year;		Ap-D, T -1				Ap-A					
(ii) A shallow dose equivalent to the skin or to any extremity of 5 rems (0.05 sievert) or more in a year;		Ap-D, T -1				Ap-A				55	
(iii) A lens of the eye dose equivalent of 1.5 rems (0.015 sievert) or more in a year;		Ap-D, T -1				Ap-A					
2 Declared pregnant workers who are likely to receive from external sources a dose equivalent to the embryo/fetus in excess of 10 percent of the applicable limit at § 835.206(a);		Ap-D, T -1				Ap-A					
3 Occupationally exposed minors likely to receive a dose in excess of 50 percent of the applicable limits at § 835.207 in a year from external sources;		Ap-D, T -1				Ap-A					

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4 Members of the public entering a controlled area likely to receive a dose in excess of 50 percent of the limit at § 835.208 in a year from external sources; and		Ap-D, T -1				Ap-A					
5 Individuals entering a high or very high radiation area.		Ap-D, T -1				Ap-A					
(b) External dose monitoring programs implemented to demonstrate compliance with § 835.402(a) shall be adequate to demonstrate compliance with the dose limits established in subpart C of this part and shall be:						Ap-A					
1 Accredited, or excepted from accreditation, in accordance with the DOE Laboratory Accreditation Program for Personnel Dosimetry; or						Ap-A					
2 Determined by the Secretarial Officer responsible for environment, safety and health matters to have performance substantially equivalent to that of programs accredited under the DOE Laboratory Accreditation Program for Personnel Dosimetry.						Ap-A					
(c) For the purpose of monitoring individual exposures to internal radiation, internal dosimetry programs (including routine bioassay programs) shall be conducted for:			3.13.1			Ap-A				54	
1 Radiological workers who, under typical conditions, are likely to receive a committed effective dose equivalent of 0.1 rem (0.001 sievert) or more from all occupational radionuclide intakes in a year;			3.13.1			Ap-A					

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2 Declared pregnant workers likely to receive an intake or intakes resulting in a dose equivalent to the embryo/fetus in excess of 10 percent of the limit stated at § 835.206(a);			3.13.1			Ap-A					
3 Occupationally exposed minors who are likely to receive a dose in excess of 50 percent of the applicable limit stated at § 835.207 from all radionuclide intakes in a year; or			3.13.1			Ap-A					
4 Members of the public entering a controlled area likely to receive a dose in excess of 50 percent of the limit stated at § 835.208 from all radionuclide intakes in a year.			3.13.1			Ap-A					
(d) Internal dose monitoring programs implemented to demonstrate compliance with § 835.402(c) shall be adequate to demonstrate compliance with the dose limits established in subpart C of this part and shall be:						Ap-A					
1 Accredited, or excepted from accreditation, in accordance with the DOE Laboratory Accreditation Program for Radiobioassay; or						Ap-A					
2 Determined by the Secretarial Officer responsible for environment, safety and health matters to have performance substantially equivalent to that of programs accredited under the DOE Laboratory Accreditation Program for Radiobioassay.						Ap-A					
§ 835.403 Air monitoring.						Ap-A					
(a) Monitoring of airborne radioactivity shall be performed:			3.12.2			Ap-A				15 18	

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
1 Where an individual is likely to receive an exposure of 40 or more DAC-hours in a year; or			3.12.2			Ap-A					
2 As necessary to characterize the airborne radioactivity hazard where respiratory protective devices for protection against airborne radionuclides have been prescribed.			3.12.2			Ap-A					
(b) Real-time air monitoring shall be performed as necessary to detect and provide warning of airborne radioactivity concentrations that warrant immediate action to terminate inhalation of airborne radioactive material.			3.12.2			Ap-A				16 17	
§ 835.404 [Reserved]						Ap-A					
§ 835.405 Receipt of packages containing radioactive material.						Ap-A					
(a) If packages containing quantities of radioactive material in excess of a Type A quantity (as defined at 10 CFR 71.4) are expected to be received from radioactive material transportation, arrangements shall be made to either:						Ap-A					
1 Take possession of the package when the carrier offers it for delivery; or						Ap-A					
2 Receive notification as soon as practicable after arrival of the package at the carrier's terminal and to take possession of the package expeditiously after receiving such notification.						Ap-A					

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(b) Upon receipt from radioactive material transportation, external surfaces of packages known to contain radioactive material shall be monitored if the package:						Ap-A					
1 Is labeled with a Radioactive White I, Yellow II, or Yellow III label (as specified at 49 CFR 172.403 and 172.436-440); or						Ap-A					
2 Has been transported as low specific activity material (as defined at 10 CFR 71.4) on an exclusive use vehicle (as defined at 10 CFR 71.4); or						Ap-A					
3 Has evidence of degradation, such as packages that are crushed, wet, or damaged.						Ap-A					
(c) The monitoring required by paragraph (b) of this section shall include:						Ap-A					
1 Measurements of removable contamination levels, unless the package contains only special form (as defined at 10 CFR 71.4) or gaseous radioactive material; and						Ap-A					
2 Measurements of the radiation levels, unless the package contains less than a Type A quantity (as defined at 10 CFR 71.4) of radioactive material.						Ap-A					

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10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(d) The monitoring required by paragraph (b) of this section shall be completed as soon as practicable following receipt of the package, but not later than 8 hours after the beginning of the working day following receipt of the package.						Ap-A					
Subpart F--Entry Control Program						Ap-A					
§ 835.501 Radiological areas.						Ap-A					
(a) Personnel entry control shall be maintained for each radiological area.		8.1		4.6		Ap-A					
(b) The degree of control shall be commensurate with existing and potential radiological hazards within the area.		8.1		4.6		Ap-A					
(c) One or more of the following methods shall be used to ensure control:		8.1				Ap-A				28	
1 Signs and barricades;		8.1		4.6.1		Ap-A					
2 Control devices on entrances;		8.1		4.1.1		Ap-A					
3 Conspicuous visual and/or audible alarms;		8.1		4.2.1		Ap-A					
4 Locked entrance ways; or		8.1		4.6.1		Ap-A					
5 Administrative controls.		8.1		4.6.2		Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(d) Written authorizations shall be required to control entry into and perform work within radiological areas. These authorizations shall specify radiation protection measures commensurate with the existing and potential hazards.		3.4	3.2	3.3		Ap-A					
(e) No control(s) shall be installed at any radiological area exit that would prevent rapid evacuation of personnel under emergency conditions.		8.1		4.6.1 4.6.2		Ap-A					
§ 835.502 High and very high radiation areas.						Ap-A					
(a) The following measures shall be implemented for each entry into a high radiation area:		8.2				Ap-A					
1 The area shall be monitored as necessary during access to determine the exposure rates to which the individuals are exposed; and		8.2		4.3.2 4.6.1 4.6.2		Ap-A					
2 Each individual shall be monitored by a supplemental dosimetry device or other means capable of providing an immediate estimate of the individual's integrated deep dose equivalent during the entry.		8.2 D-1		4.6.1		Ap-A					
(b) Physical controls. One or more of the following controls shall be used for each entrance or access point to a high radiation area where radiation levels exist such that an individual could exceed a deep dose equivalent to the whole body of 1 rem (0.01 sievert) in any one hour at 30 centimeters from the source or from any surface that the radiation penetrates:		8.2				Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
1 A control device that prevents entry to the area when high radiation levels exist or that, upon entry, causes the radiation level to be reduced below the level that defines a high radiation area;		8.2		4.1.1		Ap-A					
2 A device that functions automatically to prevent use or operation of the radiation source or field while individuals are in the area;		8.2		4.1.2		Ap-A					
3 A control device that energizes a conspicuous visible or audible alarm signal so that the individual entering the high radiation area and the supervisor of the activity are made aware of the entry;		8.2		4.2.2		Ap-A					
4 Entryways that are locked. During periods when access to the area is required, positive control over each entry is maintained;		8.2		4.6.1		Ap-A					
5 Continuous direct or electronic surveillance that is capable of preventing unauthorized entry;		8.2		4.6.2		Ap-A					
6 A control device that will automatically generate audible and visual alarm signals to alert personnel in the area before use or operation of the radiation source and in sufficient time to permit evacuation of the area or activation of a secondary control device that will prevent use or operation of the source.		8.2		4.2.2		Ap-A					
(c) Very high radiation areas. In addition to the above requirements, additional measures shall be implemented to ensure individuals are not able to gain unauthorized or inadvertent access to very high radiation areas.		8.3		4.6.2		Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(d) No control(s) shall be established in a high or very high radiation area that would prevent rapid evacuation of personnel.				4.6.1		Ap-A					
Subpart G--Posting and Labeling						Ap-A					
§ 835.601 General requirements.						Ap-A					
Note: See also § 835.605.						Ap-A					
(a) Except as otherwise provided in this subpart, postings and labels required by this subpart shall include the standard radiation warning trefoil in black or magenta imposed upon a yellow background.		5.1				Ap-A					
(b) Signs required by this subpart shall be clearly and conspicuously posted and may include radiological protection instructions.	Side-by-side doors do not have to be individually posted if it is obvious that both doors provide access to the same area.	5.2 5.3	3.4.2 3.4.4	3.4.2		Ap-A				**1** 5 6 8 10 27 46 57	
(c) The posting and labeling requirements in this subpart may be modified to reflect the special considerations of DOE activities conducted at private residences or businesses. Such modifications shall provide the same level of protection to individuals as the existing provisions in this subpart.						Ap-A					
§ 835.602 Controlled areas.						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(a) Each access point to a controlled area (as defined in § 835.2) shall be posted whenever radiological areas or radioactive material areas exist in the area. Individuals who enter only controlled areas without entering radiological areas or radioactive material areas are not expected to receive a total effective dose equivalent of more than 0.1 rem (0.001 sievert) in a year.		5.2	3.4.1	3.4.1		Ap-A					
(b) Signs used for this purpose may be selected by the contractor to avoid conflict with local security requirements.						Ap-A					
§ 835.603 Radiological areas and radioactive material areas.						Ap-A					
Each access point to radiological areas and radioactive material areas (as defined at § 835.2) shall be posted with conspicuous signs bearing the wording provided in this section.		5.3	3.4.4	3.4.2		Ap-A					
(a) Radiation Area. The words "Caution, Radiation Area" shall be posted at each radiation area.		5.3	3.4.4	3.4.2		Ap-A					
(b) High Radiation Area. The words "Caution, High Radiation Area" or "Danger, High Radiation Area" shall be posted at each high radiation area.		5.3	3.4.4	3.4.2		Ap-A					
(c) Very High Radiation Area. The words "Grave Danger, Very High Radiation Area" shall be posted at each very high radiation area.		5.3	3.4.4	3.4.2		Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(d) Airborne Radioactivity Area. The words "Caution, Airborne Radioactivity Area" or "Danger, Airborne Radioactivity Area" shall be posted at each airborne radioactivity area.		5.3	3.4.4			Ap-A					
(e) Contamination Area. The words "Caution, Contamination Area" shall be posted at each contamination area.		5.3	3.4.4			Ap-A					
(f) High Contamination Area. The words "Caution, High Contamination Area" or "Danger, High Contamination Area" shall be posted at each high contamination area.		5.3	3.4.4			Ap-A					
(g) Radioactive Material Area. The words "Caution, Radioactive Material(s)" shall be posted at each radioactive material area.	The words "Caution, Radioactive Material(s) Area" may be used to post radioactive material areas.	5.2	3.4.2			Ap-A					
§ 835.604 Exceptions to posting requirements.						Ap-A					
(a) Areas may be excepted from the posting requirements of § 835.603 for periods of less than 8 continuous hours when placed under continuous observation and control of an individual knowledgeable of, and empowered to implement, required access and exposure control measures.		5.1		3.4		Ap-A					
(b) Areas may be excepted from the radioactive material area posting requirements of § 835.603(g) when:			3.4.2			Ap-A					
1 Posted in accordance with § 835.603(a) through (f); or			3.4.2			Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
2 Each item or container of radioactive material is labeled in accordance with this subpart such that individuals entering the area are made aware of the hazard; or			3.4.2			Ap-A					
3 The radioactive material of concern consists solely of structures or installed components which have been activated (i.e. such as by being exposed to neutron radiation or particles produced in an accelerator).			3.4.2			Ap-A					
(c) Areas containing only packages received from radioactive material transportation labeled and in non-degraded condition need not be posted in accordance with § 835.603 until the packages are monitored in accordance with § 835.405.			3.4.2			Ap-A					
§ 835.605 Labeling items and containers.						Ap-A					
Except as provided in § 835.606, each item or container of radioactive material shall bear a durable, clearly visible label bearing the standard radiation warning trefoil and the words "Caution, Radioactive Material" or "Danger, Radioactive Material." The label shall also provide sufficient information to permit individuals handling, using, or working in the vicinity of the items or containers, to take precautions to avoid or control exposures.			3.4.5			Ap-A					
§ 835.606 Exceptions to labeling requirements.						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(a) Items and containers may be excepted from the radioactive material labeling requirements of § 835.605 when:			3.4.5			Ap-A					
1 Used, handled, or stored in areas posted and controlled in accordance with this subpart and sufficient information is provided to permit individuals to take precautions to avoid or control exposures; or			3.4.5			Ap-A					
2 The quantity of radioactive material is less than one tenth of the values specified in appendix E of this part; or			3.4.5			Ap-A					
3 Packaged, labeled, and marked in accordance with the regulations of the Department of Transportation or DOE Orders governing radioactive material transportation; or			3.4.5			Ap-A					
4 Inaccessible, or accessible only to individuals authorized to handle or use them, or to work in the vicinity; or			3.4.5			Ap-A					
5 Installed in manufacturing, process, or other equipment, such as reactor components, piping, and tanks.			3.4.5			Ap-A					
6 The radioactive material consists solely of nuclear weapons or their components.			3.4.5			Ap-A					
(b) Radioactive material labels applied to sealed radioactive sources may be excepted from the color specifications of § 835.601(a).			3.4.5			Ap-A					
Subpart H--Records						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
§ 835.701 General provisions.						Ap-A					
(a) Records shall be maintained to document compliance with this part and with radiation protection programs required by § 835.101.		10 Ap-F				Ap-A					
(b) Unless otherwise specified in this subpart, records shall be retained until final disposition is authorized by DOE.		10 Ap-F				Ap-A				59	
§ 835.702 Individual monitoring records.						Ap-A					
(a) Records shall be maintained to document doses received by all individuals for whom monitoring was required pursuant to § 835.402 and to document doses received during planned special exposures, unplanned doses exceeding the monitoring thresholds of § 835.402, and authorized emergency exposures.		6.0. 11.7.5				Ap-A					
(b) The results of individual external and internal dose monitoring that is performed, but not required by § 835.402, shall be recorded. Recording of the non-uniform shallow dose equivalent to the skin is not required if the dose is less than 2 percent of the limit specified for the skin at § 835.202(a)(4).		6.0.				Ap-A					
(c) The records required by this section shall:						Ap-A					
1 Be sufficient to evaluate compliance with subpart C of this part;						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
2 Be sufficient to provide dose information necessary to complete reports required by subpart I of this part;						Ap-A					
3 Include the following quantities for external dose received during the year:						Ap-A					
(i) The effective dose equivalent from external sources of radiation (deep dose equivalent may be used as effective dose equivalent for						Ap-A					
(ii) The lens of the eye dose equivalent;	The lens of the eye dose will only be recorded if it is specifically monitored.					Ap-A					
(iii) The shallow dose equivalent to the skin; and						Ap-A					
(iv) The shallow dose equivalent to the extremities.						Ap-A					
4 Include the following information for internal dose resulting from intakes received during the year:						Ap-A					
(i) Committed effective dose equivalent;						Ap-A					
(ii) Committed dose equivalent to any organ or tissue of concern; and						Ap-A					
(iii) Identity of radionuclides.						Ap-A					
5 Include the following quantities for the summation of the external and internal dose:						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(i) Total effective dose equivalent in a year;						Ap-A					
(ii) For any organ or tissue assigned an internal dose during the year, the sum of the deep dose equivalent from external exposures and the committed dose equivalent to that organ or tissue; and						Ap-A					
(iii) Cumulative total effective dose equivalent.	LLNL may report a "lifetime total effective dose equivalent" (i.e., the summation of all internal CEDEs and external annual EDEs assessed or received to date, including doses received prior to 1989), as best as can be determined.					Ap-A					
6 Include the dose equivalent to the embryo/fetus of a declared pregnant worker.						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(d) Documentation of all occupational doses received during the current year, except for doses resulting from planned special exposures conducted in compliance with § 835.204 and emergency exposures authorized in accordance with § 835.1302(d), shall be obtained to demonstrate compliance with § 835.202(a). If complete records documenting previous occupational dose during the year cannot be obtained, a written estimate signed by the individual may be accepted to demonstrate compliance.		6.0.				Ap-A					
(e) For radiological workers whose occupational dose is monitored in accordance with § 835.402, reasonable efforts shall be made to obtain complete records of prior years occupational internal and external doses.		6.0.				Ap-A					
(f) The records specified in this section that are identified with a specific individual shall be readily available to that individual.		6.0.				Ap-A					
(g) Data necessary for future verification or reassessment of the recorded doses shall be recorded.						Ap-A					
(h) All records required by this section shall be transferred to the DOE upon cessation of activities at the site that could cause exposure to individuals.						Ap-A					
§ 835.703 Other monitoring records.						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
The following information shall be documented and maintained:						Ap-A					
(a) Results of monitoring for radiation and radioactive material as required by subparts E and L of this part, except for monitoring required by § 835.1102(d);		7.0.	3.12	3.8		Ap-A				1 2 3 4 5 6 8 9 10 11 12 14 15 16 18 24 27 50 51 52	
(b) Results of monitoring used to determine individual occupational dose from external and internal sources;		6.0.				Ap-A					
(c) Results of monitoring for the release and control of material and equipment as required by § 835.1101; and			T-1			Ap-A				42	
(d) Results of maintenance and calibration performed on instruments and equipment as required by § 835.401(b).		7.1				Ap-A					
§ 835.704 Administrative records.						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(a) Training records shall be maintained, as necessary, to demonstrate compliance with § 835.901.		9.0.				Ap-A					
(b) Actions taken to maintain occupational exposures as low as reasonably achievable, including the actions required for this purpose by § 835.101, as well as facility design and control actions required by §§ 835.1001, 835.1002 and 835.1003, shall be documented.					2.11	Ap-A					
(c) Records shall be maintained to document the results of internal audits and other reviews of program content and implementation.		Ap-B				Ap-A					
(d) Written declarations of pregnancy, including the estimated date of conception, and revocations of declarations of pregnancy shall be maintained.		Ap-C				Ap-A					
(e) Changes in equipment, techniques, and procedures used for monitoring shall be documented.			3.12 3.13			Ap-A					
(f) Records shall be maintained as necessary to demonstrate compliance with the requirements of §§ 835.1201 and 835.1202 for sealed radioactive source control, inventory, and source leak tests.			3.10.			Ap-A					
Subpart I--Reports to Individuals						Ap-A					
§ 835.801 Reports to individuals.						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(a) Radiation exposure data for individuals monitored in accordance with § 835.402 shall be reported as specified in this section. The information shall include the data required under § 835.702(c). Each notification and report shall be in writing and include: the DOE site or facility name, the name of the individual, and the individual's social security number, employee number, or other unique identification number.						Ap-A					
(b) Upon the request from an individual terminating employment, records of exposure shall be provided to that individual as soon as the data are available, but not later than 90 days after termination. A written estimate of the radiation dose received by that employee based on available information shall be provided at the time of termination, if requested.		6.0.				Ap-A					
(c) Each DOE- or DOE-contractor-operated site or facility shall, on an annual basis, provide a radiation dose report to each individual monitored during the year at that site or facility in accordance with § 835.402.		Ap-D, T-2				Ap-A					
(d) Detailed information concerning any individual's exposure shall be made available to the individual upon request of that individual, consistent with the provisions of the Privacy Act (5 U.S.C. 552a).		6.0.				Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(e) When a DOE contractor is required to report to the Department, pursuant to Departmental requirements for occurrence reporting and processing, any exposure of an individual to radiation and/or radioactive material, or planned special exposure in accordance with § 835.204(e), the contractor shall also provide that individual with a report on his or her exposure data included therein. Such report shall be transmitted at a time not later than the transmittal to the Department.		6.0.				Ap-A					
Subpart J--Radiation Safety Training						Ap-A					
§ 835.901 Radiation safety training.						Ap-A					
(a) Each individual shall complete radiation safety training on the topics established at § 835.901(c) commensurate with the hazards in the area and the required controls:		9.0.				Ap-A					
1 Before being permitted unescorted access to controlled areas; and		9.0.				Ap-A					
2 Before receiving occupational dose during access to controlled areas at a DOE site or facility.						Ap-A					
(b) Each individual shall demonstrate knowledge of the radiation safety training topics established in § 835.901(c), commensurate with the hazards in the area and required controls, by successful completion of an examination and performance demonstrations:						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
1 Before being permitted unescorted access to radiological areas; and		T-3				Ap-A					
2 Before performing unescorted assignments as a radiological worker.		T-3				Ap-A					
(c) Radiation safety training shall include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:		9.0.				Ap-A					
1 Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure;		9.0.				Ap-A					
2 Basic radiological fundamentals and radiation protection concepts;		9.0.				Ap-A					
3 Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions;		9.0. 9.2				Ap-A					
4 Individual rights and responsibilities as related to implementation of the facility radiation protection program;		9.0.				Ap-A					
5 Individual responsibilities for implementing ALARA measures required by § 835.101; and		9.0.				Ap-A					

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LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
6 Individual exposure reports that may be requested in accordance with § 835.801.		9.0.				Ap-A					
(d) When an escort is used in lieu of training in accordance with paragraph (a) or (b) of this section, the escort shall:		9.0.				Ap-A					
1 Have completed radiation safety training, examinations, and performance demonstrations required for entry to the area and performance of the work; and		9.0.				Ap-A					
2 Ensure that all escorted individuals comply with the documented radiation protection program.		9.0.				Ap-A					
(e) Radiation safety training shall be provided to individuals when there is a significant change to radiation protection policies and procedures that may affect the individual and at intervals not to exceed 24 months. Such training provided for individuals subject to the requirements of § 835.901(b)(1) and (b)(2) shall include successful completion of an examination.		9.0.				Ap-A					
§ 835.902 [Removed and Reserved].						Ap-A					
§ 835.903 [Removed and Reserved].						Ap-A					
Subpart K--Design and Control						Ap-A					
§ 835.1001 Design and control.						Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(a) Measures shall be taken to maintain radiation exposure in controlled areas ALARA through physical design features and administrative control. The primary methods used shall be physical design features (e.g., confinement, ventilation, remote handling, and shielding). Administrative controls shall be employed only as supplemental methods to control radiation exposure.					2.4	Ap-A					
(b) For specific activities where use of physical design features is demonstrated to be impractical, administrative controls shall be used to maintain radiation exposures ALARA.					2.4	Ap-A					
§ 835.1002 Facility design and modifications.						Ap-A					
During the design of new facilities or modification of existing facilities, the following objectives shall be adopted:					2.4	Ap-A					
(a) Optimization methods shall be used to assure that occupational exposure is maintained ALARA in developing and justifying facility design and physical controls.					2.4	Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(b) The design objective for controlling personnel exposure from external sources of radiation in areas of continuous occupational occupancy (2000 hours per year) shall be to maintain exposure levels below an average of 0.5 mrem (5 microsieverts) per hour and as far below this average as is reasonably achievable. The design objectives for exposure rates for potential exposure to a radiological worker where occupancy differs from the above shall be ALARA and shall not exceed 20 percent of the applicable standards in § 835.202.					2.4	Ap-A					
(c) Regarding the control of airborne radioactive material, the design objective shall be, under normal conditions, to avoid releases to the workplace atmosphere and in any situation, to control the inhalation of such material by workers to levels that are ALARA; confinement and ventilation shall normally be used.			4.1		2.4	Ap-A					
(d) The design or modification of a facility and the selection of materials shall include features that facilitate operations, maintenance, decontamination, and decommissioning.			4.1		2.4	Ap-A					
§ 835.1003 Workplace Controls.						Ap-A					
During routine operations, the combination of physical design features and administrative controls shall provide that:					2.4	Ap-A					
(a) The anticipated occupational dose to general employees shall not exceed the limits established at § 835.202; and		3.3			2.4	Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(b) The ALARA process is utilized for personnel exposures to ionizing radiation.		3.4	1.0.	1.0.		Ap-A					
Subpart L - Radioactive Contamination Control						Ap-A					
§ 835.1101 Control of material and equipment.						Ap-A					
(a) Except as provided in paragraphs (b) and (c) of this section, material and equipment in contamination areas, high contamination areas, and airborne radioactivity areas shall not be released to a controlled area if:			3.6			Ap-A				42	
1 Removable surface contamination levels on accessible surfaces exceed the removable surface contamination values specified in appendix D of this part; or			3.6			Ap-A					
2 Prior use suggests that the removable surface contamination levels on inaccessible surfaces are likely to exceed the removable surface contamination values specified in appendix D of this part.			3.6			Ap-A					
(b) Material and equipment exceeding the removable surface contamination values specified in appendix D of this part may be conditionally released for movement on-site from one radiological area for immediate placement in another radiological area only if appropriate monitoring is performed and appropriate controls for the movement are established and exercised.			3.9			Ap-A					

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10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(c) Material and equipment with fixed contamination levels that exceed the total surface contamination values specified in appendix D of this part may be released for use in controlled areas outside of radiological areas only under the following conditions:			3.9.1			Ap-A					
1 Removable surface contamination levels are below the removable surface contamination values specified in appendix D of this part; and			3.9.1			Ap-A					
2 The material or equipment is routinely monitored and clearly marked or labeled to alert personnel of the contaminated status.			3.9.1			Ap-A					
Note: See § 835.703(c).						Ap-A					
§ 835.1102 Control of areas.						Ap-A					
(a) Appropriate controls shall be maintained and verified which prevent the inadvertent transfer of removable contamination to locations outside of radiological areas under normal operating conditions.			3.7			Ap-A				18 22 23 25 42 50 51	
(b) Any area in which contamination levels exceed the values specified in appendix D of this part shall be controlled in a manner commensurate with the physical and chemical characteristics of the contaminant, the radionuclides present, and the fixed and removable surface contamination levels.			3.7			Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(c) Areas accessible to individuals where the measured total surface contamination levels exceed, but the removable surface contamination levels are less than, corresponding surface contamination values specified in appendix D of this part, shall be controlled as follows when located outside of radiological areas:			3.7			Ap-A				48	
1 The area shall be routinely monitored to ensure the removable surface contamination level remains below the removable surface contamination values specified in appendix D of this part; and			3.7			Ap-A					
2 The area shall be conspicuously marked to warn individuals of the contaminated status.			3.7			Ap-A					
(d) Individuals exiting contamination, high contamination, or airborne radioactivity areas shall be monitored, as appropriate, for the presence of surface contamination.			3.13.1			Ap-A					
(e) Protective clothing shall be required for entry to areas in which removable contamination exists at levels exceeding the removable surface contamination values specified in appendix D of this part.			3.5			Ap-A					
Subpart M--Sealed Radioactive Source Control						Ap-A					
§ 835.1201 Sealed radioactive source control.						Ap-A					

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10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
Sealed radioactive sources shall be used, handled, and stored in a manner commensurate with the hazards associated with operations involving the sources.			3.8.1			Ap-A					
§ 835.1202 Accountable sealed radioactive sources.						Ap-A					
(a) Each accountable sealed radioactive source shall be inventoried at intervals not to exceed six months. This inventory shall:			3.10.			Ap-A				46	
1 Establish the physical location of each accountable sealed radioactive source;			3.10.			Ap-A					
2 Verify the presence and adequacy of associated postings and labels; and			3.10.			Ap-A					
3 Establish the adequacy of storage locations, containers, and devices.			3.10.			Ap-A					
(b) Except for sealed radioactive sources consisting solely of gaseous radioactive material or tritium, each accountable sealed radioactive source shall be subject to a source leak test upon receipt, when damage is suspected, and at intervals not to exceed six months. Source leak tests shall be capable of detecting radioactive material leakage equal to or exceeding 0.005 microcuries (μCi).			3.10.			Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(c) Notwithstanding the requirements of paragraph (b) of this section, an accountable sealed radioactive source is not subject to periodic source leak testing if that source has been removed from service. Such sources shall be stored in a controlled location, subject to periodic inventory as required by paragraph (a) of this section, and subject to source leak testing prior to being returned to service.			3.10.			Ap-A					
(d) Notwithstanding the requirements of paragraphs (a) and (b) of this section, an accountable sealed radioactive source is not subject to periodic inventory and source leak testing if that source is located in an area that is unsafe for human entry or otherwise inaccessible.			3.10.			Ap-A					
(e) An accountable sealed radioactive source found to be leaking radioactive material shall be controlled in a manner that minimizes the spread of radioactive contamination.			3.8.1			Ap-A					
Subpart N--Emergency Exposure Situations						Ap-A					
§ 835.1301 General provisions.		4.5				Ap-A					
(a) A general employee whose occupational dose has exceeded the numerical value of any of the limits specified in § 835.202 as a result of an authorized emergency exposure may be permitted to return to work in radiological areas during the current year providing that all of the following conditions are met:						Ap-A	3.5				

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LLNL's RPP, Revision 7.1		ES&H Manual, Volume II						Facility Implementation			
10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
1 Approval is first obtained from the contractor management and the Head of the responsible DOE field organization;						Ap-A	3.5				
2 The individual receives counseling from radiological protection and medical personnel regarding the consequences of receiving additional occupational exposure during the year; and						Ap-A	3.5				
3 The affected employee agrees to return to radiological work.						Ap-A	3.5				
(b) All doses exceeding the limits specified in § 835.202 shall be recorded in the affected individual's occupational dose record.						Ap-A	3.5				
(c) When the conditions under which a dose was received in excess of the limits specified in § 835.202, except those doses received in accordance with § 835.204, have been eliminated, operating management shall notify the Head of the responsible DOE field organization.						Ap-A	3.5				
(d) Operations after a dose was received in excess of the limits specified in §835.202, except those received in accordance with §835.204, may be resumed only with the approval of DOE.	Only operations associated with the overexposure must be stopped; such operations will only be resumed with the approval of DOE.					Ap-A	3.5				
§ 835.1302 Emergency exposure situations.						Ap-A					

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10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
(a) The risk of injury to those individuals involved in rescue and recovery operations shall be minimized.						Ap-A	3.1 3.3				
(b) Operating management shall weigh actual and potential risks against the benefits to be gained.						Ap-A	3.1				
(c) No individual shall be required to perform rescue action that might involve substantial personal risk.						Ap-A	3.1				
(d) Each individual authorized to perform emergency actions likely to result in occupational doses exceeding the values of the limits provided at § 835.202(a) shall be trained in accordance with § 835.901(b) and briefed beforehand on the known or anticipated hazards to which the individual will be subjected.						Ap-A	3.4				
§ 835.1303 [Reserved]						Ap-A					
§ 835.1304 Nuclear accident dosimetry.						Ap-A					
(a) Installations possessing sufficient quantities of fissile material to potentially constitute a critical mass, such that the excessive exposure of individuals to radiation from a nuclear accident is possible, shall provide nuclear accident dosimetry for those individuals.		Ap-D				Ap-A					
(b) Nuclear accident dosimetry shall include the following:		Ap-D				Ap-A					

Table A-1. Crosswalk of RPP Requirements and LLNL Documentation.

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10 CFR 835	**LLNL Implementation Methodology**	**Doc 20.1**	**Doc 20.2**	**Doc 20.3**	**Doc 20.4**	**Doc 20.5**	**Doc 22.6**	**NA**	**per ES&HM**	**DAP**	**Facility Documentation**
1 A method to conduct initial screening of individuals involved in a nuclear accident to determine whether significant exposures to radiation occurred;		Ap-D				Ap-A					
2 Methods and equipment for analysis of biological materials;		Ap-D				Ap-A					
3 A system of fixed nuclear accident dosimeter units; and					2.4	Ap-A					
4 Personal nuclear accident dosimeters.		Ap-D				Ap-A					